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ABSTRACT

A study by James E. Grunig and his students at the University of Maryland tested a refined version of Grunig's situational theory of communication behavior (1968) by surveying the attitudes of the public regarding Acquired Immune Deficiency Syndrome (AIDS). In preparation for the study, 20 years of research conducted by Grunig and his students was reviewed to develop the situational theory of communication behaviors, communication effects, and publics. Three independent variables--problem recognition, level of involvement, and constraint recognition--were separated into two dimensions: internal and external; and two new variables--cognitive breadth and depth--were added to Grunig's theory. All these concepts were integrated into a causal model of the causes and effects of communication behaviors. Results of a questionnaire given to a random sample of 210 Washington, D.C. residents revealed an active, all-issues public and an apathetic public. A causal analysis using the LISREL computer program indicated that: (1) passive communication behavior has a positive relationship to internal problem recognition (suggesting that communications programs aimed at apathetic publics can stimulate active communication by increasing their curiosity); and (2) internal involvement has a positive relationship to external problem recognition (suggesting that self-identity focuses a person on external problems and thereby focuses his or her communication behavior). (Two figures and four tables of data are included, and 70 references are attached.) (MHC)

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RECONSTRUCTION OF A SITUATIONAL THEORY OF COMMUNICATION: INTERNAL AND EXTERNAL CONCEPTS AS IDENTIFIERS OF PUBLICS FOR AIDS

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RECONSTRUCTION OF A SITUATIONAL THEORY OF COMMUNICATION:
INTERNAL AND EXTERNAL CONCEPTS AS IDENTIFIERS OF PUBLICS FOR AIDS

Abstract

This paper reviews the program of research that Grunig and his students have conducted for 20 years to develop a situational theory of communication behaviors, communication effects, and publics. It then reviews theories and research of other scholars who have studied individual concepts in the situational theory. Most of that literature concerns level of involvement.

The literature review isolated two important concepts of involvement: internal (ego involvement) and external (issue involvement). Literature related to problem recognition and constraint recognition and suggested that they, too, could be divided into internal and external dimensions.

A review of recent literature from cognitive psychology identified two cognitive variables, breadth and depth of cognition, that were conceptualized as effects of the situational variables and as mediators of two kinds of attitudes: situational and cross-situational. Finally, all of these new concepts were integrated into a causal model of the causes and effects of communication behaviors.

The revised theoretical variables were used to identify publics that arise around the AIDS issue. Canonical correlation identified an active, all-issues public and an apathetic public. A causal analysis using the LISREL program developed a model that fit the data well. It showed that the two concepts of problem recognition explain communication behavior better than the concepts of involvement and constraint recognition. Likewise, active and passive communication behaviors had little effect alone on cognitive breadth and depth. Finally, the LISREL analysis uncovered two theoretically important new paths in the model. Passive communication behavior has a positive path to internal problem recognition--suggesting that passive communication can trigger active communication. Internal involvement has a positive path to external problem recognition--suggesting that self identity focuses a person on certain problems in the environment and through that process focuses his or her communication behavior and its effects.

RECONSTRUCTION OF A SITUATIONAL THEORY OF COMMUNICATION: INTERNAL AND EXTERNAL CONCEPTS AS IDENTIFIERS OF PUBLICS FOR AIDS

For 20 years, Grunig and his students at the University of Maryland have developed, researched and improved a situational theory of communication behavior that provides answers to several problems of central concern to communication scholars. The theory explains why people communicate and when they are most likely to communicate. It explains how predicted communication behavior can be used to segment mass audiences of the media and public communication programs into publics likely to communicate about one or more issues.

The theory also explains when cognitive, attitudinal, and behavioral effects of communication are most likely to occur and the publics for which those effects occur most often. Finally, the theory explains when publics develop from loose aggregations of individuals into organized activist groups that apply the pressure of their "public opinion" to governments and other organizations involved in making public policy.

This paper reports the results of a study that had both a basic and an applied purpose. The basic purpose was to test a reconceptualization of the situational theory. The applied purpose was to segment publics that have developed from the issue of AIDS and to describe their cognitions and attitudes. We chose AIDS as an issue for study because of the current interest in developing communication programs about the disease. We also chose to study AIDS because it was an ideal issue for testing a major refinement of the theory.

We have refined the theory by separating the three independent variables--problem recognition, level of involvement, and constraint recognition--into two dimensions--internal and external--suggested by previous research on the theory and by several theories from social psychology. AIDS was an ideal issue for testing this refinement of the theory because the mystery of the disease is a fascinating intellectual puzzle (an internal dimension of the theory) and the disease is a severe problem that affects or could affect many people (the external dimension of the theory).

In addition to reconceptualizing the theory into internal and external dimensions, we have included recently developed concepts of cognitions as effects explained by the theory. Finally, we specify the relationships among

these newly conceptualized variables in the form of a causal model and report the results of a LISREL analysis of that model.

PREVIOUS DEVELOPMENT OF THE SITUATIONAL THEORY

Grunig (1968) published the first version of what is now the situational theory in a monograph on the relationship between communication and economic decision making. Based on theories of decision making from economics and psychology, he theorized that individuals seek information actively when they make genuine rather than habitual decisions. He used Dewey's (1938) concept of a problematic situation to predict that people would actively seek information when they recognize that a situation presents a problem and that they would seek reinforcing information--as predicted by theories of cognitive dissonance--when they do not recognize a problem and behave habitually.

Grunig's theory also was situational. Problem recognition was not a trait that people took from situation to situation; it was a perception of a person that a specific situation is problematic.

Grunig developed a second independent variable, constraint recognition, while studying decision and communication behaviors of large landowners (Grunig, 1969) and peasants (Grunig, 1971) in Colombia. In these studies, he found that people have little need to communicate in situations where constraints--which especially are prevalent in an underdeveloped country but also are common for people everywhere--prevent people from making choices.

At this point, Grunig conceptualized communication behavior as purposive and active: a tool for solving problems. Thus, the theory fit into the tradition of uses and gratifications theories, which are based on the assumption that people seek information actively. In Grunig (1976), he added Krugman's (1965) concept of level of involvement to the theory to explain passive communication behavior (which Grunig called information processing) as well as active communication behavior (which he called information seeking).[1]

Grunig defined level of involvement as a perception that people have of a situation, whereas Krugman had defined it as a characteristic of a medium and Ray (1973) as a characteristic of a product. When people perceive that they

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[1] Grunig (1979a) showed how the concepts of involvement, information processing, and information seeking could extend uses and gratifications theory to explain passive as well as active communication behavior.

have a personal connection with a situation (an involvement), Grunig predicted, they search actively for information as well as process it passively. When involvement is low, they process information passively that is available without a premeditated search but they do not search for it actively.

At this stage of his research, Grunig also had a fourth independent variable in his situational theory, the presence of a referent criterion. He defined the referent criterion as a solution carried from previous situations to a new situation. Thus the referent criterion, Grunig theorized, reduced the need for a person to seek additional information in the new situation. Several studies, however (e.g., Grunig & Disbrow, 1977), found that the referent criterion had little effect on communication behavior. It was more of an effect of communication than a cause, and Grunig treated it as a dependent variable in some studies (e.g., Grunig, 1983b). We now have dropped the variable in favor of two other cognitive and attitudinal variables. As we will see below, Grunig has defined "referent criterion" at times to be what now appears to a "schema" and at other times to be what now appears to be a "cross-situational attitude."

Throughout its development, the situational theory could be specified as two regression equations. The following two equations, for example, are taken from Grunig and Disbrow (1977)--at a point when involvement had been added to the theory and referent criterion was still included. The standardized Beta weights were calculated from data on environmental issues. They fit the theoretical predictions almost perfectly but did show the weak effect of the referent criterion:[2]

AC = .20PR + .11LI - .16CR - .01RC

PC = .26PR + .03LI - .13CR - .03RC

where AC = active communication behavior
PC = passive communication behavior
PR = problem recognition
LI = level of involvement
CR = constraint recognition
RC = presence of a referent criterion

Grunig and Disbrow (1977) and Grunig (1979b, 1982a, 1983a) also used combinations of the four variables, after they were dichotomized, to segment publics for different situational issues. They then calculated conditional probabilities to predict the likelihood that each public for each issue would

[2] Similar regressions are reported in Grunig (1983).

engage in the two communication behaviors--probabilities that could be used to plan communication programs for each public (see, e.g., Grunig & Hunt, 1984, Chs. 7, 8). In addition, Grunig (1982a, 1983a) calculated probabilities of several communication effects for the different combinations of variables. The effects included retention of a message, holding of cognitions and attitudes and the occurrence of individual behaviors.

The probabilities for the most active public, for example, (high problem recognition and involvement, low constraint recognition and referent criterion present) as compared with the least active public were 99% vs. 63% for passive communication behavior, 77% vs. 20% for active communication behavior, 48% vs. 34% for message retention, 99% vs. 65% for holding of a cognition, 98% vs. 74% for holding of an attitude, and 52% vs. 6% for behavior (Grunig, 1982a, p. 189).

Importantly, however, Grunig predicted that the theory would explain only the presence of cognitions, attitudes, and behaviors and not their content or valence. People <u>construct</u> cognitions, attitudes, and behaviors, Grunig maintained. The situational theory is a teleological theory. It predicts when people will think and communicate purposively about situations. Logically, then it also should be able to predict when they will develop cognitions and attitudes about issues. It cannot predict the nature and direction of cognitions or the valence of attitudes because people control those personally. They are not the product of deterministic forces outside the individual.

Several studies of publics arising from environmental issues and corporate policy issues (summarized in Grunig, 1987b), however, have found some consistency in the cognitive strategies constructed by members of active publics and in the nature of their attitudes. Grunig and Ipes (1983) also found that active publics have more organized cognitions than do passive publics.

Two studies, Grunig (1982a) and Grunig and Ipes (1983), showed that passive publics are more likely to hold attitudes than cognitions. Active publics are equally likely to hold both attitudes and cognitions.[3] Less active

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[3] This result is consistent with what Petty and Cacioppo (1981, pp. 225-252) described as the "peripheral route" to attitude change as compared to the "direct route," a theory that we will discuss in more detail below.

publics express attitudes even when they have no cognitions on which to base them.

Next, Grunig developed a methodology over several studies that he used to identify publics arising around particular situational issues, publics that public relations practitioners and other communication professionals can use to target communication programs (Grunig, 1975, 1977, 1978, 1979b, 1982a, 1982b, 1983a, 1983b and Grunig et al., 1988). In using his theory to segment publics, Grunig took the notion from Dewey (1927) and Blumer's (1946) classic theories of public opinion that issues define publics more than publics define issues (e.g, Grunig, 1978; Grunig & Hunt, 1984, pp. 143-147).[4]

In a typical study, Grunig began by identifying several related issues about which an organization or medium wants to communicate. For example, Grunig (1983a) used eight issues (such as air pollution, extinction of whales, and strip mining) in two studies of environmental publics. Grunig then used canonical correlation to simultaneously correlate the independent variables (problem recognition, involvement, constraint recognition) with the dependent variables (active and passive communication behavior) for all of the situations--thus testing the basic theory. He then used the canonical variates as profiles of the active and passive publics arising from the set of situations studied.

The canonical variates produced by this research have identified four kinds of publics consistently enough to assume they have theoretical regularity:

All-issue publics. Publics active on all of the issues.

Apathetic publics. Publics inattentive to all of the issues.

Single-issue publics. Publics active on one or a small subset of the issues that concerns only a small part of the population. Such issues have included the slaughter of whales or the controversy over the sale of infant formula in third-world countries.

Hot-issue publics. Publics active only on a single issue that involves nearly everyone in the population and that has received extensive media

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[4] Price (1987, p. 6) recently reached the same conclusion after reading the same classic sources: "Although opinion polling practices often assume that publics define their issues, the classical view instead suggests that issues define their publics."

coverage (such as the gasoline shortage, drunken driving, or toxic waste disposal).[5]

In the last extension of the situational theory, Grunig (1987a) studied members of the Sierra Club to determine if his theory could predict which publics would organize into an activist group. Activist groups are especially important to public relations practitioners because they most limit the autonomy of organizations to pursue their goals (Grunig, 1989).

Grunig found all but the apathetic publics among the members of the Sierra Club, but he found that nembers of the all-issues public were most active in the organization and belonged to the most environmental organizations. He also found that people joined the activist group to engage deliberately in collective action, to "delegate their activism" to the activist group.

The situational theory has been successful in solving important communication problems, but no good theory ever stagnates. Our research and literature related to the situational concepts suggest three important refinements of the theory to which we now turn.

INTERNAL AND EXTERNAL DISTINCTIONS IN THE INDEPENDENT VARIABLES

Although the situational theory as an integrated whole is Grunig's unique contribution, other researchers have used most of the concepts in the theory. Problem recognition, for example, is found in many models of decision making. Constraint recognition is similar to many concepts of political efficacy and to Bandura's (1977) concept of personal efficacy. Involvement, however, has been of particular interest to communication scholars, persisting through 40 years of research (Salmon, 1986, p. 244).

Level of Involvement

Both Salmon (1986) and Chaffee and Roser (1986) have pointed out that definitions and measures of involvement differ widely in the communication literature. Gunther (1987, p. 35) added that definitions of involvement not only differ but also lead to opposite theoretical predictions.

Grunig consistently has defined involvement as being both cognitive and situational: it is a person's perception that he or she has a connection with a specific situation. Grunig took the idea that involvement is cognitive from

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[5] Graber (1984, pp. 105-107) called these "hot issues" "obtrusive issues." Lang and Lang (1981, p. 35) called them "low-threshold issues."

Krugman (1965) and the idea that it is situational from Preston (1970), Ray (1973), and Rothschild and Ray (1974). Krugman saw involvement mostly as a characteristic of a medium, whereas the others saw it as a characteristic of a product or an issue.

Other concepts of involvement, however, suggest how to strengthen the situational theory. Most importantly, we believe the theory can be improved by distinguishing between internal and external concepts of involvement: whether involvement exists mostly in the mind of a person or in the person's real-world environment.

Grunig learned early in his research that a person's perceptions of his or her environment do not necessarily match objective conditions in the environment, a distinction that also is a crucial part of Weick's (1969) cognitive theory of organizations. In his study of environmental publics, Grunig (1983a, pp. 36-40), found that the actual participation of people in environmental activities did not discriminate among publics identified by perceived involvement, problem recognition, and constraint recognition.[6]

The importance of the internal and external dimensions of involvement can be clarified by examining involvement concepts in the literature. Salmon (1986, p. 256) reviewed 115 published articles and identified four concepts of involvement, which he defined as points on a continuum. These concepts range from being a trait of a person to being a characteristic of a situation or product:

*Involvement as a personality trait: some people are more involved in decisions or situations than others.

*Involvement as an individual state: ego involvement, interest of an individual in a stimulus.

*Involvement as salience, relevance, future consequences of a stimulus for an individual.

*Involvement as a characteristic of a product, issue, or situation that arouses concern in most or all persons.

In evaluating these four concepts of involvement, we argue first that involvement should not be confused with other concepts, especially those in Grunig's situational theory. For example, the terms "interest," "salience," or

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[6] Grunig (1979c) also found that time spent in these environmental activities were poor instrumental variables for perceived involvement when he tested a causal model of the situational theory using two-stage least squares.

"relevance" of an issue, situation, or product are states that are aroused by involvement but are not involvement themselves. In Grunig's theory, such states could be aroused just as easily by problem recognition or the absence of constraint recognition.[7]

Chaffee and Roser (1986) used three operational definitions of involvement in a study of a campaign against heart disease. Two of these definitions seem to be measures of Grunig's other concepts. The first measure ("Is there anything a person can do to reduce their (sic) risk of heart disease") measures Grunig's constraint recognition. A second measure, self-reported readership of print literature, is much like Grunig's measure of information seeking--an effect of involvement. The third measure, a question asking respondents to estimate their risk of heart disease, comes close to Grunig's definition of involvement as a perceived connection with a situation. Yet, we believe that perceived risk falls short of being a complete indicator of involvement because people can feel a connection with heart disease even though are not afraid of having the disease themselves.[8]

In addition to expressing caution about the adequacy of measures of involvement, we believe that the first definition of involvement as a personality trait identifies an infrequent type of involvement. Salmon (1986, p. 257) pointed out that people with continuing low involvement in consumer products or political issues "typically do not have the resources to engage in the consumer process anyway." Salmon's explanation suggests that involvement as a personality trait actually is high constraint recognition typical of what

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[7] Nowak and Salmon (1987), for example, developed a multi-item scale of involvement that included adjectives such as important, meaningful, relevant, interesting, and significant. These seem to us to be effects of involvement and not measures of involvement. They could easily be the effects of many other variables as well, especially problem recognition.

[8] Salmon (1985, p. 109), similarly, measured involvement by asking respondents if they thought they might have a heart attack in the next 10 years. As a result, he seemed to measure fear more than involvement and found a negative effect on communication behavior rather than the positive effect he had expected. Chaffee and Roser (1986) found a similar negative effect on consistency of knowledge, attitudes, and behavior from their operational definition of involvement as perceived risk of heart disease. Involvement, we believe, should be defined as a perceived connection to a situation. The connection could occur for a number of reasons. For example, people might believe that a friend or member of the family could get heart disease, that they should take measures to prevent heart disease (such as reducing cholesterol) even though they do not fear having a heart attack, or that heart disease might be costly to society.

Grunig (1976) has called the behavior of "fatalistic" publics. But, Grunig has found that fatalistic behavior is situational, not a personality trait.

The fourth concept of involvement--as a characteristic of a situation, product, or issue that is recognized as involving by nearly everyone--has been the dominant definition of involvement used by marketing researchers. That concept shows up, too, as an explanation of why Grunig's "hot-issue" public comes about. As described above, the hot-issue public arises when a situation is so involving or is the topic of such intensive media coverage that nearly everyone perceives a connection with it.

We believe that fourth concept of involvement as a characteristic of a situation can be seen as a special case of the third concept, which defines involvement as the perception that a situation has consequences for an individual. Involvement as a characteristic of a situation occurs when the consequences of a situation are so widespread that everyone feels he or she is affected.

Eliminating the first and fourth types of involvement, therefore, leaves two definitions: involvement as an individual state and involvement as a perceived connection to a situation. We call these two concepts internal and external involvement.

Internal Involvement. Internal involvement can be conceptualized best as Sherif, Sherif, and Nebergall's (1965) ego involvement, an important concept in their social judgement theory of attitudes. They say (p. 64) that ego involvement is high for "religious, political, and social issues on which a person has taken a stand," issues that have a "context of warm personal import" to that person and are "ingredients in the experience of self-identify" (pp. 64-65).

Sherif et al. (1965) used the concept of ego involvement to explain when and why people would resist attitude change. They posited that people have latitudes of acceptance and rejection for messages with a latitude of noncommitment in between. High ego involvement produces a wider latitude of rejection and a narrower latitude of acceptance. Low involvement results in a narrower latitude of rejection and a larger range of noncommitment.

Sherif et al., therefore, predicted that high internal involvement makes people less likely to change attitudes. Grunig's situational theory, however,

is concerned more with explaining communication behavior and the presence of cognitions and attitudes than with attitude change. Logically, however, high ego involvement should motivate people to communicate actively and to develop cognitions and attitudes--in the same way that Grunig's more general concept of involvement motivates people to communicate. However, as dissonance theory predicts, people who have high internal involvement in an issue may engage in active communication mostly to form cognitions that reinforce existing attitudes.

Ego involvement, according to Sherif et al. (1965, p. 65), does not consist completely of a personal state. Ego involvement must be situationally aroused before it affects judgement. Thus the concept of internal involvement appears to have a conceptual link with Grunig's situational theory. Ego involvement, however, has both a cross-situational component (the relationship of past issue evaluations to self identify) and a situational component (a new issue). As we will see, internal problem recognition and constraint recognition also seem to have a cross-situational as well as situational component.

External Involvement. In contrast to the concept of ego involvement, most of the other concepts in the literature describe involvement as external rather than internal. These external concepts include those in the marketing and political theories, which we described above, that developed out of the Krugman (1965) research tradition.

The most recent and important theoretical tradition has developed from Petty and Cacioppo's (1979; 1981, Ch. 9; 1986; Petty, Cacioppo & Goldman, 1981) elaboration likelihood model of attitude change. In a book reviewing theories of attitude change, Petty and Cacioppo (1981) concluded that the theories could be placed on opposite ends of a continuum of "elaboration likelihood"--the extent to which theorists assumed that people reason and develop well-founded attitudes from messages.

Petty and Cacioppo called the opposite ends of their continuum the "central" and "peripheral" routes to persuasion. When people take the central route in constructing attitudes, they are more likely to proceed in a relatively objective manner and to "elaborate" upon the information they receive (Petty & Cacioppo, 1986):

> This means that people are more likely to attend to the appeal; attempt to access relevant information from both external and internal sources; scrutinize and make inferences about the message arguments in light of any other pertinent information available; draw conclusions about the merits of the arguments for the recommendation based upon their analyses; and consequently derive an overall evaluation of, or attitude toward, the recommendation (p. 7).

With the peripheral route, however, people pay less attention to the "quality of arguments" in a message and engage in less thinking. As a result, people construct evaluations more in line with previous attitudes or based on such peripheral cues as the credibility of the source.

Although the purpose of the elaboration likelihood model is to predict attitude change more than communication behavior, its central and peripheral routes are remarkably similar to Grunig's concepts of active and passive communication behavior. Petty and Cacioppo's concept of "personal relevance" or "issue involvement" is even more similar. It is the major concept they use to explain why people take the central rather than the peripheral route in making judgments.

Petty and Cacioppo (1986, p. 82) define involvement in external terms: it occurs when people expect an issue to have significant consequences for their own lives. Petty and Cacioppo have operationalized involvement as an experimental manipulation. In two experiments, for example, Petty & Cacioppo (1979) and Petty, Cacioppo & Goldman (1981) presented persuasive messages to university students about changes in university policies. In the high-involvement condition, students were told the change would apply to them. In the low-involvement condition, they were told that the rules would apply at another university or after they had graduated.

Although Petty and Cacioppo (1986, pp. 81-83) equated their concept of involvement with that of Sherif, Sherif and Nebergall (1965); they predicted that involvement would enhance the likelihood of persuasion whereas Sherif et al. predicted that it would reduce the likelihood of persuasion. That Petty and Cacioppo failed to see a difference in the two concepts is evident when they used the contrasting predictions to criticize social judgement theory (1981, p. 109).

We believe, in contrast, that the opposing predictions stem less from a deficiency in one of the theories than from the fact that the two theories are

based on different concepts of involvement, one internal and the other external.[9]

We conclude, therefore, that the literature suggests a difference in our concepts of internal and external involvement. The important theoretical question that follows is whether the distinction makes a difference in predicting variation in the dependent concepts with which we are concerned: active and passive communication behavior and the presence of cognitions, attitudes, and behaviors.

The differing effects found in experiments derived from social judgement theory and the elaboration likelihood model show that the internal vs. external distinction affects persuasion (the extent to which messages produce or change the valence of attitudes). In his previous research, Grunig assumed that both kinds of involvement have the same effect on communication behavior and the presence of cognitions, attitudes, and behaviors. Involvement stimulates active but not passive communication and increases the likelihood that people will construct cognitions and attitudes.

However, the internal vs. external distinction, especially when applied to problem recognition and constraint recognition as well as involvement, seems to explain different communication behaviors that can be used to segment publics into different categories than do the single concepts. We will return to those possibilities after examining internal and external problem recognition and constraint recognition.

Problem Recognition and Constraint Recognition

In the past, Grunig has not recognized a difference between internal and external problem recognition and constraint recognition, just as he did not isolate the two kinds of involvement. Separating the many concepts of involvement into internal and external dimensions, however, suggests that the same distinction might be fruitful for the other concepts.

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[9] Gunther (1987, p. 36) tried to resolve the difference between the two theories by conceptualizing three levels of involvement. He argued that Petty and Cacioppo's high involvement was actually moderate involvement as was Sherif et al.'s low involvement. Thus, Petty and Cacioppo's low involvement was Gunther's low involvement and Sherif et al.'s high involvement was his high involvement. We believe that Gunther, like Petty and Cacioppo, has attempted to "mix apples and oranges."

For problem recognition, the distinction means that problems that a person recognizes be in the environment or in his or her mind. Internal problems reflect curiosity or intellectual interests. External problems are problems for which people have to engage in a noncognitive behavior to resolve.

Justification for making no distinction between internal and external problem recognition can be found in Dewey's writings, from which Grunig took the concept of problem recognition. Dewey (1938, pp. 68-69; 1939, p. 38), the pragmatic philosopher, argued against the idea that there are two kinds of knowledge, one isolated from reality and pursued for enjoyment and the other based on experience in actual situations. All knowledge is based on experience, he argued--on what he called the "felt situation" (1938, p. 68).

A retrospective look at research with the situational theory suggests, however, that the internal vs external distinction might resolve some important theoretical problems that surfaced in Grunig's research on science and environmental communication. In the first of these studies, Grunig's (1974) measured the effects of several science writing devices on different publics.

The measures of problem recognition and constraint recognition were external: "Is the problem discussed in this article important to you?" (problem recognition) and "Do you think ordinary citizens like you could use information like that presented here to have an impact on government policy?" (constraint recognition). In a followup study, Bartholomew (1973) used measures that were internal: "Are you interested in understanding physics?" (problem recognition) and "Do you feel you could understand physics if you wanted to? (constraint recognition).

Both studies produced similar results: the active publics, which were high in problem recognition and low in constraint recognition, read science stories more actively and learned more. The unanswered question was whether different publics would have been identified if both the internal and external concepts had been measured and whether different writing techniques would have been more effective on the different publics.

Publics identified by the internal concepts would be intellectual publics interested in an issue for the sake of understanding it. External publics would be applied publics interested in developing knowledge to solve "real-world" problems. Although Dewey would have denied that there could be such a

difference, we believe now that people could seek knowledge about an issue such as AIDS because of an intellectual curiosity about it as well as because the disease is a problem that people believe affects their lives or the lives of others.

The distinction between internal and external constraint recognition can be seen in rhetorical theories that argue, in essence, that "reality" is a cognition, mediated by symbols.[10] The distinction also is suggested by Bandura's (1977) conceptualization of self efficacy in his social learning theory.

Bandura distinguished between two "expectations": efficacy expectations and outcome expectations (p. 79). An "outcome expectation" seems to describe an external constraint: "...a person's estimate that a given behavior will lead to certain outcomes." An "efficacy expectation" seems to be internal: "...the conviction that one can successfully execute the behavior required to produce the outcomes."[11]

In the studies of science communication, the specific definition of internal constraint recognition was that people did not believe they could understand an issue. Although there could be internal constraints other than this intellectual one, it was the internal constraint that seemed most important for AIDS. Thus, "inability to understand" was the specific internal constraint measured in this study.

Our discussion of ego involvement suggested that internal involvement is a cross situational cognition that is triggered by a situational issue. External involvement, in contrast, is almost entirely situational. Concepts related to internal problem recognition and constraint recognition in the literature suggest that they, too, may be cross-situational.

Petty and Cacioppo (1986, pp.48-54) conceptualized a "need for cognition" to explain why people develop elaborated cognitions and use the "central route" to construct attitudes. McCombs (1981, p. 133), similarly, conceptualized a

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[10] Trujillo and Toth (1987, pp. 212-213) discuss the rhetorical approach applied to organizational theory. Examples of this approach can be found in Putnam and Pacanowsky (1983).

[11] Anderson (1987) has applied Bandura's social learning theory to communication problems. He argued that an important objective of communication campaigns is to increase self efficacy by providing a model of how people can behave in a way they think is not possible.

"need for orientation" to explain why the media are more likely to set an agenda for some people than for others.

Both of these concepts of "needs" seem to describe what we are calling internal problem recognition. We reject the concept of a "need" as an inherent trait, however, which is how Petty and Cacioppo conceptualized the "need for cognition." Explaining a behavior as caused by a "need," we believe, represents circular reasoning: the "need" seldom is more than another name for the behavior itself.

Instead, we believe that internal problem recognition is probably cross-situational but that it is a generalized product of prior experience and socialization. Some people have been exposed more to internal problems, have been reinforced for being curious, or have had time to explore intellectual questions.

Bandura (1977) suggested the same for personal efficacy, the analogue to our internal constraint recognition:

> Performance accomplishments provide the most dependable source of efficacy expectations because they are based on one's own personal experiences. Successes raise mastery expectations; repeated failures lower them, especially if the mishaps occur early in the course of events (p. 81).

This quote also suggests that internal constraint recognition, like involvement and problem recognition, is a cross-situational cognition that people apply to situations: when a specific issue triggers their curiosity, ego, and or sense that they are capable of affecting that issue.

Given this reconceptualization of the three independent variables, we turn to the revised concepts of the effects they produce.

COGNITIVE BREADTH AND DEPTH AND THEIR RELATIONSHIP TO ATTITUDES AND BEHAVIOR

As discussed above, several studies have shown that active publics, as identified by the situational variables, are more likely to construct both attitudes and cognitions (e.g., Grunig, 1982, p. 189) and to hold organized cognitions (Grunig & Ipes, 1983) than are apathetic publics. Other studies (Stamm & Grunig, 1977; Grunig & Stamm, 1979) have looked for the kinds of cognitions and attitudes held by different kinds of publics and have tried to explain how they vary with situations.

Recently attitude theorists have conceptualized attitudes in ways that make the concept more compatible with the situational theory. The theories, as reviewed in Grunig (1983a), conceptualize attitudes as situational and teleological rather than cross-situational and deterministic. Attitudes are situational when people construct new solutions to issues as situations change. People also may have a cross-situational attitude, a solution which they apply across situations--which is one of Grunig's definitions for his concept of a referent criterion.[12] Attitude research has shown, however, that situational attitudes predict actual behavior better than do cross-situational attitudes (see, e.g., Fishbein & Ajzen, 1975).

In addition, attitude research now is dominated by cognitive-response theories such as the elaboration likelihood model discussed above (Petty & Cacioppo, 1981, pp. 225-252; Markus & Zajonc, 1985). Those theories state that people are most likely to form or change attitudes from messages that produce thoughts, especially in highly involving situations.

Finally, research based on cognitive response theories has shown that attitudes formed from elaborated cognitions are most likely to produce lasting effects on behavior (Petty & Cacioppo, 1986, p.21). Changes in cognitions produced by communication programs can also produce short-term changes in behavior if the behaviors are specific and easy to implement (Winett, 1986; O'Keefe, 1985).

These trends in theory building, therefore, reinforce the importance of elaborated cognitions as effects of communication, both as ends in themselves and for the mediating effects they have on attitudes and behavior. The situational theory has become even more useful in light of these trends because its variables predict when people will communicate actively. Active communication, like cognition, is valuable in itself; but it too is an important mediating variable because it produces elaborated cognitions, which produce attitudes and behaviors.

Given the importance of cognitions to our theory of communication, we turn next to theories of cognitive psychology to specify the nature of elaborated

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[12] For examples, see Grunig and Ipes (1983); Stamm and Grunig (1977); Grunig and Stamm (1979) and Grunig, Ramsey, and Schneider (1985). The term "referent criterion" originally came from Carter (1965), although Grunig has changed the meaning from Carter's original definition.

cognitions more precisely. Craik and Lockhart (1972) introduced the concept of depth of processing to describe what cognitive psychologists previously had called long-term memory. To Craik and Lockhart, "depth of processing" means that people apply "a greater degree of semantic or cognitive analysis" to incoming information.

Cognitive researchers concluded later that Craik and Lockhart's original concept of depth should, more accurately, be described as breadth of processing, where breadth meant "number of elaborations" (Anderson & Reder, 1979, p. 391.) Both Anderson and Reder (1979, p. 390) and Craik (1979, p. 449) distinguished breadth from depth. Breadth represented quantity of elaborations, depth quality of elaboration. Depth, according to Craik (1979, p. 457), meant that a cognition has "abstract, symbolic properties."

An increase in breadth of processing can be defined as an increase in the number of "cognitive units" held in memory (Anderson, 1983, p. 76, developed the term "cognitive unit"). Depth of processing, in turn, can be defined as organizing these cognitive unit into a "schema," a large, complex unit of knowledge (Anderson, 1985, p. 103).[13]

Psychologists define schema in somewhat the same way that Grunig has defined referent criterion in some studies. In those studies, he defined referent criterion as a decision rule based on prior knowledge. Since he has used the term referent criterion to refer both to what we now call a schema and a cross-situational attitude, we now use those terms in its place.

Markus & Zajonc (1985, p. 145) that "schema" has not been a well-defined concept; and, as a result, the term has taken on diverse meanings for both cognitive and social psychologists. Markus & Zajonc captured the essence of its meaning for our theory, however, when they said (p. 145):

> For the most part social psychologists who have used the term schemas have viewed them as subjective "theories" about how the social world operates.

Theories are abstract; schemas are abstract. Deep cognitive processing, therefore, means that a person develops and uses a semantic abstraction to organize and explain the cognitive units that he or she accrues by increasing cognitive breadth.

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[13] For reviews of literature on schemas and their application to communication, see Grunig, Ramsey, and Schneider (1985) and Schneider (1985).

Pavlik (1983) developed similar concepts of breadth and depth from the literature on cognitive style and information processing. In a study of the effects of two health information campaigns, he defined breadth of cognition as "dimensional complexity," the number of strategies or suggestions mentioned in response to an open-end question as solutions for a health problem such as smoking (p. 84). Pavlik defined depth as hierarchical complexity, "the levels of abstractness reflected in a response." His results, then, showed that the information campaign produced greater increases in breadth than in depth and that this increase was higher for people with a high level of involvement.

With the concepts of cognitive breadth and depth in hand, then, we can now specify the revised situational theory as a causal model.

A CAUSAL MODEL OF THE SITUATIONAL THEORY

Figure 1 depicts the revised situational theory in a form that can be tested through causal analysis. Causal paths are specified from each of the revised "independent variables" to both information processing and seeking. In a causal model, however, these variables are called exogenous variables. No path is specified from either involvement variable to information processing, as the theory states that passive communication behavior can occur even though involvement is low.

A path is specified from information processing to internal and external problem recognition as well as the other way around--i.e., the paths are nonrecursive. Grunig (1979c) tested this nonrecursive relationship previously in a two-stage least squares analysis but could not reach a definite conclusion about its strength because of problems with the data. Determining whether there is reciprocal relationship between problem recognition and information processing is important for both theoretical and pragmatic purposes.

A significant return path from information processing to the problem recognition variables would show that it is possible to stimulate communication behavior through communication. That is, if people are exposed to a message randomly, processing of the message could increase problem recognition. Increased problem recognition could, in turn, stimulate both information processing and seeking.

Other paths in the model specify that information processing can increase breadth of cognition but not depth. Theoretically, passive communication

behavior is not extensive enough for a person to process information deeply. Information seeking, however, can increase both breadth and depth as specified in Figure 1. Next, the model states that breadth can increase depth of cognition by providing people with more cognitive units to integrate. There is no reverse arrow, however, because depth integrates but does little to increase or decrease the number of cognitive units retained.

Finally, the model shows that cognitive breadth should increase the probability that a person will construct a situational attitude and that the situational attitude, because it may become cross-situational, increases the likelihood that a person will hold a cross-situational attitude. The reciprocal arrow is included from presence of a cross-situational attitude to the situational attitude because a person may use the cross-situational attitude in a specific situation.

Finally, paths show that cognitive depth increases the probability that a person will construct both a situational and a cross-situational attitude. The path from depth to the cross-situational attitude is included because schemas often contain valenced cognitive units that can be translated directly into an attitude.

RESEARCH QUESTIONS

Reconceptualizing the situational theory and specifying it as a causal model leads to two research questions for this study. General research questions, rather than specific hypotheses, are appropriate because of the multivariate relationships to be tested. The research questions include:

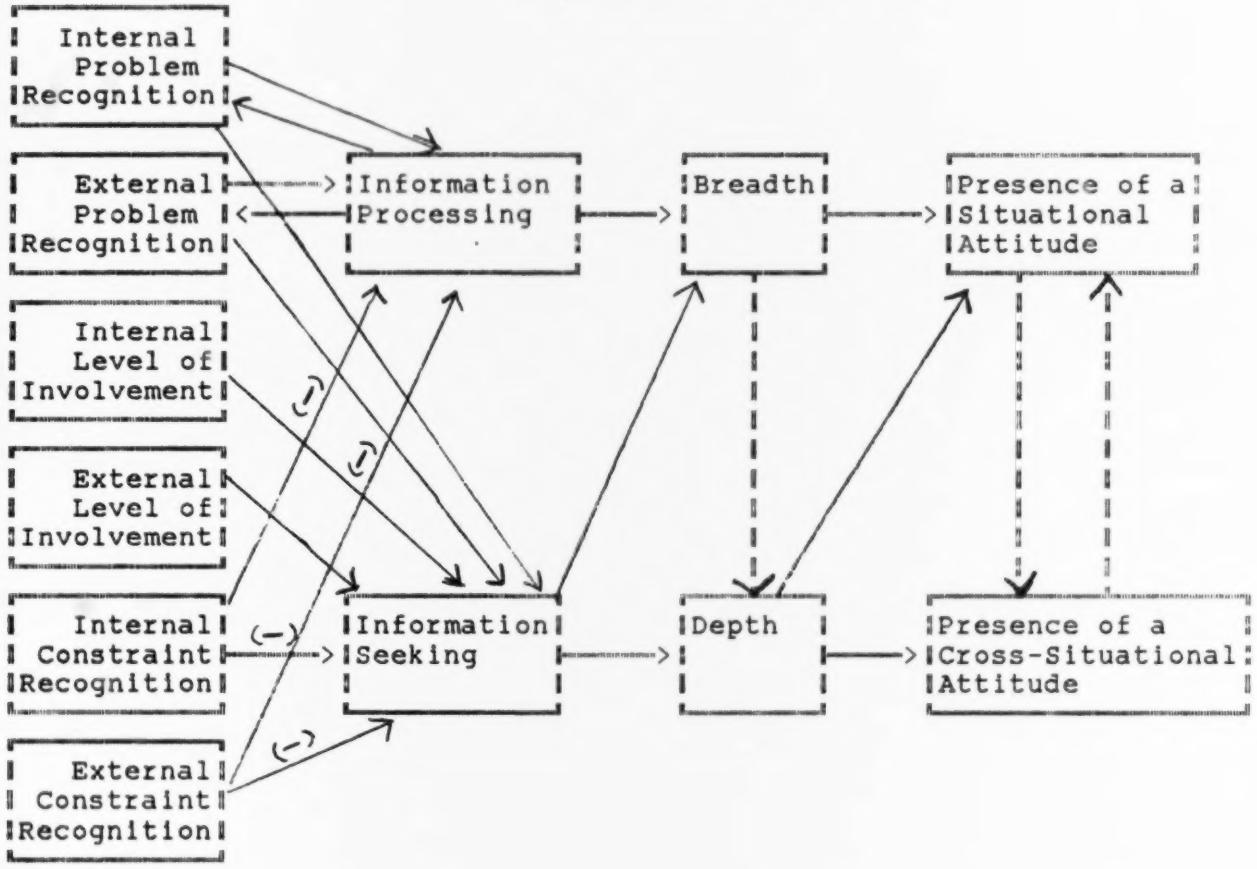
RQ1: What kinds of publics will the revised situational concepts identify on the AIDS issue? Will these publics be different from those identified in previous research?

RQ2: Will a LISREL analysis support the causal model depicted in Figure 1? What modifications should be made in the model to improve its fit to the data for the AIDS issue?

METHODOLOGY

A questionnaire was developed to measure the concepts specified in the revised situational theory for the AIDS issues. In contrast to previous studies of publics using the situational theory, this study covered only one issue. As a result it was possible to develop multiple indicators of each of the concepts, whereas Grunig mostly had been forced to use single indicators in other studies because of the large number of issues included.

FIGURE 1
Original Theoretical Model



Also in contrast to previous studies, we developed fractionation scales rather than Likert-type items for each concept using approximately the same procedure that Barnett, Hamlin, and Danowski (1982) used for an audit of organizational communication. A fractionation scale allows respondents to estimate a concept with whatever number they choose. Its bottom point is zero, but it is unbounded at the upper end. Such a scale allows for considerable variance and for fine discriminations on each variable. With the scale, respondents are given a reference point for their responses: in this study they were told that a score of 100 was the average that people would give for all of the items in a set.[14]

Most of the items measured with a fractionation scale in this study had a positive skew greater than 1.0. To correct for the skew, these variables were transformed by calculating their square roots. The square-root transformations reduced the skew in each case to 1.0 or below.

Two items each were developed to measure the problem recognition, level of involvement, and constraint recognition variables. Three items were developed to measure information seeking and processing. As in previous studies, we measured information processing by asking respondents to estimate how likely they would be to pay attention to hypothetical stories to which they could be exposed on a television news program. To measure information seeking, they were asked how likely they would be to send for brochures whose titles were read to them.

In this study, respondents also were asked to estimate how many television, radio, newspaper, or magazine stories they had heard or read on AIDS in the last month (actual information processing). Then, they were asked how many brochures, booklets or similar materials they had read on AIDS in the last year (actual information seeking).

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[14] For example, the first set measuring information processing were introduced with the following explanation:

"I will read you the opening lines from some possible stories that you might hear on a television news program. For your answer, please give me any number from zero to as high as you want. An answer of 100 would be the amount of attention the average person pays to television news stories in general. If you think you would pay twice as much attention to the story I read, you would give an answer of 200...three and one-half times 350...half as much 50. If you think you would pay no attention at all, you would give a zero. You can go as high as you want.

For the attitudinal variables, respondents used the fractionation scale to estimate their agreement with three situational and three cross-situational items. Two of the situational items represented positive attitudes about AIDS and one a negative attitude. Two of the cross-situational items were negative, one positive.

To measure presence of the two kinds of attitudes, respondents were told not to reply if they had no opinion about the item. We calculated a score for the presence of the two kinds of attitudes by summing the number of the three items on which respondents expressed an opinion.

Breadth of cognition was measured with an open-end question similar to the one used by Pavlik (1983):

> Many people know a lot about AIDS, but most know little. Would you tell me briefly what <u>you</u> know about AIDS? Please try to list as many facts as you can about the disease. (Probe twice) Anything else?

Prior to the survey, we developed a list of 18 facts about AIDS that had been reported in the media. Interviewers checked these facts as respondents mentioned them. They also recorded additional facts mentioned by respondents. The total number of facts mentioned by respondents were coded as the breadth score. Incorrect facts were also recorded and coded into a separate scale.

To measure depth, interviewers asked respondents--again in an open-end question--to explain what they thought was the cause of AIDS. For depth, we were looking for a theoretical understanding of AIDS: an understanding of the HTLV virus as the cause of AIDS and explanation of the facts known about the disease. Answers were coded on a five-point scale ranging from no answer to a totally correct answer.

Finally, we asked demographic questions about age, education, marital status, political philosophy, race, and sex.

We addressed the first research question using a canonical correlation analysis as Grunig has done in a number of studies of publics based on the situational theory. In the canonical correlation, the six independent variables were correlated simultaneously with the dependent variables--information processing and seeking, breadth and depth of cognition, and presence of situational and cross-situational attitudes.

Correlations of the variables with the canonical variates tested the basic correlational premises of the theory. Canonical variates scores then were

developed for each person in the sample, and respondents were placed into the public defined by the variate for which they had the highest score. We also correlated the demographic variables and the valenced attitude items with the canonical variates to further describe the publics identified by the variates.

We addressed the second research question by analyzing the theoretical model described in Figure 1 with the LISREL computer program developed by Joreskog and Sorbom (1986), which uses the maximum likelihood method to estimate parameters of a model like ours. LISREL offers many advantages for analyzing structural models. According to McPhee and Babrow (1987, p. 354), LISREL's three main advantages are that:

> It permits powerful and sensitive analysis of causal relationships.
>
> When multiple indicators are used, it automatically corrects for measurement error and provides estimates of the reliability of each measure.
>
> It suggest alternative explanations for relationships among variables in a model.

We used LISREL, therefore, to estimate the parameters of the paths specified in Figure 1, to drop some of the variables and paths, and to uncover paths not originally specified in the model.

The questionnaire was administered in Spring 1987 to a sample of 210 residents of the Washington, D. C., metropolitan area chosen by random digit dialing. Questionnaires were administered by students enrolled in the graduate seminar in public relations publics at the University of Maryland.[15] Response rate was relatively low, 57%, no doubt because of the controversial and personal nature of the AIDS issue.

RESULTS

To check the reliability of the items used to measure the situational variables, we calculated correlation coefficients between the two or three items for each concept. With the exception of external constraint recognition, the correlations were moderate to high: .59 for external problem recognition, .74 for internal problem recognition, .63 for external involvement, .53 for internal involvement, and .50 for internal constraint recognition.

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[15] The students included Linda Childers, Amy Doonan, Philip Gelso, Stuart Hales, Steven Konick, Elizabeth Kraft, Lisa Lingenfelter, Francis Marra, Paulette Moore, Heidi Nass, Ruth Ann Patterson, Ichiro Shiraki, K. Sriramesh, and Sandra Ventre.

The correlation between the two items measuring external constraint recognition was .31. The correlation should have been negative, however, because the items were worded in opposite directions. Close examination of the items showed that one actually measured personal efficacy ("To what extent do you believe AIDS is a problem that you can do little about?") and the other group efficacy ("To what extent do you believe people like you could affect public policy toward AIDS if they wanted to?") Respondents generally felt they could do little personally about AIDS (mean=162 on the open-end fractionation scale) but that people together could affect policy (mean=197).

In the canonical correlation, therefore, we entered the two items separately. We called the individual item "external constraint recognition" and the collective item "external group efficacy." In the LISREL analysis, we used only the first item because it was closest in meaning and effect to the conceptualization of external constraint recognition.

The three information seeking items correlated .48, .61, and .77 among themselves. They correlated .15, -.02, and.10 with respondents estimates of the actual number of items they had read about AIDS. The three information processing items correlated .41, .52, and .45 among themselves and .06, .08, and .15 with the estimates of actual information processing. Because of the low correlations with the hypothetical items, we entered actual seeking and processing into the canonical correlation separately. We included the actual estimates as indicators in the LISREL analysis, however, because we wanted to determine the relative contribution of both the actual and hypothetical indicators of information seeking and processing.

The average means for the indicators of each concept showed that respondents had relatively high scores for all of the variables measured: all were above the standard of 100 that respondents were told was average. The means were higher for problem recognition than for level of involvement: 278 for external and 220 for internal problem recognition; 203 for internal level of involvement and 184 for external involvement. Although respondents felt that AIDS was an important issue to them and to society, they appeared to perceive the disease as a problem even though it was not involving to them.

For internal constraint recognition, the mean was 136-- meaning that respondents generally believed AIDS was difficult for them to understand. The

mean for external constraint recognition was 162; but, in contrast, group efficacy was also high: 197. The mean of the information processing means, as should be the case, was higher than for information seeking: 160 vs. 124.

Table 1 reports responses to the open-end question designed to measure breadth. It shows that people know the facts about AIDS that most often are reported in the media, such as AIDS being common among homosexuals and intravenous drug users and that it is transmitted sexually. The facts familiar to people in this Washington-area sample were quite similar to facts of which people reported being aware in many other polls about AIDS (Singer, Rogers & Corcoran, 1987).

The mean score for breadth was 5.75, meaning that the average correspondent could name about six facts he or she had heard about AIDS--a relatively impressive figure. We must remember, however, that the sample came from a population with a high level of education and that the response rate was low, suggesting that the less informed were less likely to agree to an interview.

The mean score on depth was 3.61, slightly above the midpoint of the scale. Although this score was high, it also suggests that the majority of the sample did not have a strong understanding of the virus theory of AIDS. Breadth of cognition, therefore, seems to be stronger among this sample than depth of cognition.

In view of these overall date, we turn next to the research question about the nature of the publics for AIDS.

Research Question 1

The first research question asked what kinds of publics the revised situational concepts would identify on the AIDS issue and whether these publics would be different from those identified in research on other issues. Table 2 reports the results of a canonical correlation analysis that isolated variates that we the used to describe publics.

Table 2 identifies two kinds of publics, one active and the other a nonpublic. These publics seem to approximate the all-issues and apathetic publics found in previous research. It is possible, though, that the public identified by the first variate could be a single-issue public because only one issue was studied.

TABLE 1
Number of Individual Responses to Breadth of Cognition Question

Response	Number	% Resp.	% Cases
AIDS common among homosexuals	142	11.6	70.6
AIDS common in IV drug users	109	8.9	54.2
Women as well as men get AIDS	56	4.6	27.9
Pregnant women can transmit to unborn child	23	1.9	11.4
Heterosexuals can get AIDS	99	8.1	49.3
There is no known cure for AIDS	86	7.0	42.8
AIDS is caused by a virus	55	4.5	27.4
A vaccine is unlikely for at least 5 years	12	1.0	6.0
Condoms can prevent transmission	51	4.2	25.4
Cannot be passed through casual contact	55	4.5	27.4
Passed through blood and other body fluids	82	6.7	40.8
Can be passed through blood transfusion	70	5.7	34.8
In Africa AIDS is equally common in men and women	18	1.5	9.0
AIDS is transmitted sexually	114	9.3	56.7
People can carry AIDS for several years before getting the disease	41	3.3	20.4
It is possible to test for AIDS by the presence of an antibody in the blood	21	1.7	10.4
AIDS damages the immune system/victims die of opportunistic diseases	49	4.0	24.4
Primary way to prevent AIDS is to have a single sexual partner who does not have AIDS	15	1.2	7.5
AIDS is fatal	20	1.6	10.0
Locations with the highest incidence	8	.7	4.0
Origins	13	1.1	6.5
Symptoms	9	.7	4.5
Medical classification (e.g. HTLV III)	7	.6	3.5
Availability of a dry that will reduce or postpone symptoms (AZT), although name not always mentioned specifically	11	.9	5.5
AIDS is common among prostitutes	9	.7	4.5
Anal sex between males makes them susceptible	5	.4	2.5
Primates transmitted AIDS to humans	4	.3	2.0
AIDS cannot be transmitted through saliva or tears	4	.3	2.0
Availability of a blood test to detect AIDS	4	.3	2.0
AIDS is on the national agenda; there is increased research and attention	3	.2	1.5
AIDS is common among hemophiliacs and or/ minorities	5	.4	2.5
Independent and/or voluntary groups have joined the fight	2	.2	1.0
Abstinence is a way to protect oneself from AIDS	5	.4	2.5
Incorrect answers	19	1.5	9.5

Mean Scores: Breadth=5.75 (SD=3.61)
Depth=3.11 (SD=1.31) (5-pt. scale)

TABLE 2
Canonical Correlation
of Situational, Communication, and Effects Variables

	Correlations with:	
Independent Variables	Variate 1	Variate 2
Internal problem recognition	.90	.06
External problem recognition	.91	-.06
Internal level of involvement	.74	-.08
External level of involvement	.69	-.03
Internal constraint recognition	.24	.90
External constraint recognition	.39	.16
External group efficacy	.44	-.18
Dependent Variables		
Information processing	.94	.02
Information seeking	.66	.09
Actual processing	.14	-.38
Actual seeking	.13	-.43
Breadth of cognition	.21	-.29
Depth of cognition	.05	-.79
Presence of situational attitude	.22	-.30
Presence of cross-situational attitude	.22	-.35
Canonical correlation	.61	.39
N=202	p.<.01	p<.05
Correlations with Demographic Variables		
Age	.03	.01
Education	.06	-.20
Liberal politics	.18	-.11
Male sex	-.19	.01
Unmarried status	.03	-.22
Black or Hispanic race	-.11	.07
Correlations with Situational Attitudes		
Limiting oneself to a single sexual partner makes it possible to avoid getting AIDS	.35	-.11
AIDS patients should be isolated from other people	.07	.22
Educating people about AIDS will solve the problem	.37	.00
Correlations with Cross-situational Attitudes		
AIDS is God's way of punishing homosexuals and drug users	-.16	.24
More money should be spent on AIDS research even though AIDS has been limited mostly to homosexuals so far	.53	-.12
Good people are unlikely to get AIDS	-.21	.22
Relative percentage of sample		
Highest canonical variate score on variate	46%	54%
Above mean on variate	41%	50%

The first variate, which identifies an active public, provides strong support once again for the basic premises of the situational theory. Both kinds of problem recognition are especially high for this variate. Those correlations suggest, as did the means reported above, that problem recognition is the most important force driving communication behavior on this issue.

Both kinds of involvement also correlate highly with the variate as well. Constraint recognition, in contrast to most previous research, correlates positively rather than negatively with Variate 1. Those correlations suggest that people, even though they communicate actively and think about AIDS, believe that it is difficult for them to understand the issue (internal constraint recognition) and for them to do anything about the issue (external constraint recognition). Interestingly, however, they believe that people together can impact policy toward AIDS.

Both hypothetical and actual information seeking and processing correlate with the first variate, although the correlations with the estimates of actual seeking and processing are low. As predicted, breadth of cognition and presence of both kinds of attitudes also correlate positively with the variate. Depth of cognition does not correlate significantly, although the correlation is positive. As expected, these correlations show that communication more often leads to breadth than to depth.

Variate 2 clearly describes an apathetic public. All correlations are negative or low, with one major exception--internal constraint recognition. Members of the apathetic public described by this variate feel strongly that AIDS is too difficult for them to understand. The also feel somewhat constrained externally and have a low level of perceived group efficacy.

After developing these canonical variates, we correlated the demographic characteristics and the valenced attitudes with the variates. These results also are shown in Table 2. The demographic correlations show that age does not discriminate between the publics. However, the active public has somewhat more education, is more liberal, is more female, and tends to be white. The apathetic public, on the other hand, is less-educated, conservative, and more likely to be married.

The correlations with the two kinds of attitudes show that the active publics agree with most of the positive attitude statements about AIDS. The

apathetic public, on the other hand, agrees with most of the negative statements. On the situational measures, the apathetic public believes that AIDS patients should be isolated from other people. On the cross-situational measures, it agrees that AIDS is God's punishment for homosexuals and that good people are unlikely to get AIDS.

We then asked the computer to place cases into one of the other public based on their highest canonical variate score or because they scored above the mean on the variate. This discrimination allowed us to determine the relative percentage of the population in each public. Although the split was fairly even, there was a 10% difference in favor of the apathetic public. Since the response rate was low and the sample was taken from a city where education is high, we can only conclude that in the country as a whole the apathetic public will be considerably larger than the active public. Communication programs should be feasible with the active public, but they would seem to have little chance of success with the larger apathetic public.

We should note also that people most at risk with AIDS--young, single, male, and black or Hispanic--do not show up on either of these variates. Singer, Rogers, and Corcoran (1987, p. 581) reported, in contrast, that polls show that these groups are most likely to be concerned with AIDS.

We did produce other findings, however, that support their conclusion. In addition to the canonical correlation reported in Table 2, we conducted a separate canonical correlation in which we included the demographic variables in the analysis itself rather than correlating them with the variates after the analysis was completed. That analysis produced a variate almost identical to the first one in Table 2. But it also produced a second variate for which education, liberal politics, male sex, unmarried status, and white race correlated with actual seeking and processing of information, depth and breadth of cognition, and presence of the attitudes.

All of the situational variables correlated negatively with that variate, suggesting that the variate extracted the effect of the demographic variables after the effect of the situational variables had been accounted for. With the exception of race, that variate mirrored the Singer et al. poll results. Education dominated the correlations, however--suggesting that <u>educated</u> people

who are at risk inform themselves and have developed the deepest cognitions about AIDS.

At this point, one should ask if the separation of the situational variables into internal and external concepts produced different publics. For the active, all-issues public, the separate concepts made no difference. But the separate concepts did help us to understand the apathetic public better. The principal reason for its apathy was the belief that it could not understand the issue--internal constraint recognition. A campaign aimed at this public, therefore, would first have to increase what Bandura (1976) called personal efficacy--in this case, the belief that one can understand the AIDS issue--before it could affect cognitions and attitudes.

Although the new concepts did not make a large difference in segmenting the publics, we will see next that they do provide us with a better understanding of the causal processes that produce communication behavior and its effects.

Research Question 2

The second research question asked if a causal analysis using the LISREL program would support the model depicted in Figure 1. It then asked what modifications should be made in the model to improve its fit to the data for the AIDS issue.

In the language of causal modeling, the variables enclosed in boxes in Figure 1 make up the "theoretical model." The theoretical model, however, must be constructed from the indicators that make up the "measurement model." The indicator variables in the measurement model are combined through what is in effect confirmatory factor analysis to produce scores for the underlying variables in the theoretical model. The program then calculates coefficients to show the strength of association between the indicators and the underlying variables.

The LISREL program also calculates coefficients for the paths between the underlying variables that were specified in the original theoretical model. It also calculates "T-values," which indicate whether the path coefficients are significant. "Modification indices" suggest paths that could be added to the model to strengthen its fit to the data. It is important, however, not to add paths unless they make sense within the theoretical framework that produced the

original model (McPhee & Babrow, 1987, p. 363). Finally, LISREL computes reliability estimates for each of the indicators of a theoretical variable for which there were multiple indicators. As discussed above, LISREL produces path estimates with the error variance eliminated.

Figure 2 depicts our final theoretical and measurement models. The theoretical model is contained in the boxes at the interior of the diagram. The measurement model consists of the X_i and Y_i variables and their residual variances at the outside of the diagram. Paths specified as 1.0 or 0 in the model are those that are fixed (one for each variable) in order to make estimation possible.

The model also is labeled with Greek letters, as is the custom with causal analysis. Exogenous variables (internal and external involvement, internal and external constraint recognition, politics, sex, and education) are labeled as XIs ( ). Endogenous variables (internal and external problem recognition. information seeking and processing, breadth and depth) are labeled as ETAs ( ).

Several changes were made in the original model, the first before and the others after initial LISREL runs, before the final model in Figure 2 was estimated:

*Three exogenous variables (liberal politics, male sex, and education) were added in order to overidentify the model--a necessity for computation. Politics and sex were chosen because they correlated with external problem recognition. Education was added because it correlated with breadth and depth. As a result, the model was overidentified by both the counting rule and the order condition.

*Presence of situational and cross-situational attitudes were eliminated from the model because the computer could not produce a solution when they were included.[16] Most respondents did have attitudes, and the low variances seemed to be causing the problem. Although conceptually it is logical to argue that many people do not hold attitudes; in practice they almost always express them when asked in a interview. Eliminating the holding of attitudes, therefore, made breadth and depth the last variables in the causal chain.

*One of the indicators of internal constraint recognition was eliminated because it was producing a negative variance in the matrix of which it was a part. It also produced a path coefficient with the opposite sign of the other indicator when the model was solved with only one of the two indicators. The indicator that was kept had a negative sign as predicted by the theory.

*The path from information processing to external problem recognition was dropped because the coefficient was low and it, too, was producing a negative variance.

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[16] Because LISREL solves an entire system of equations simultaneously, it can produce "all sorts of 'improper solutions'" (McPhee & Babrow, 1987, p. 363) when data are poor for one or more variables.

FIGURE 2
Final Measurement and Theoretical Models

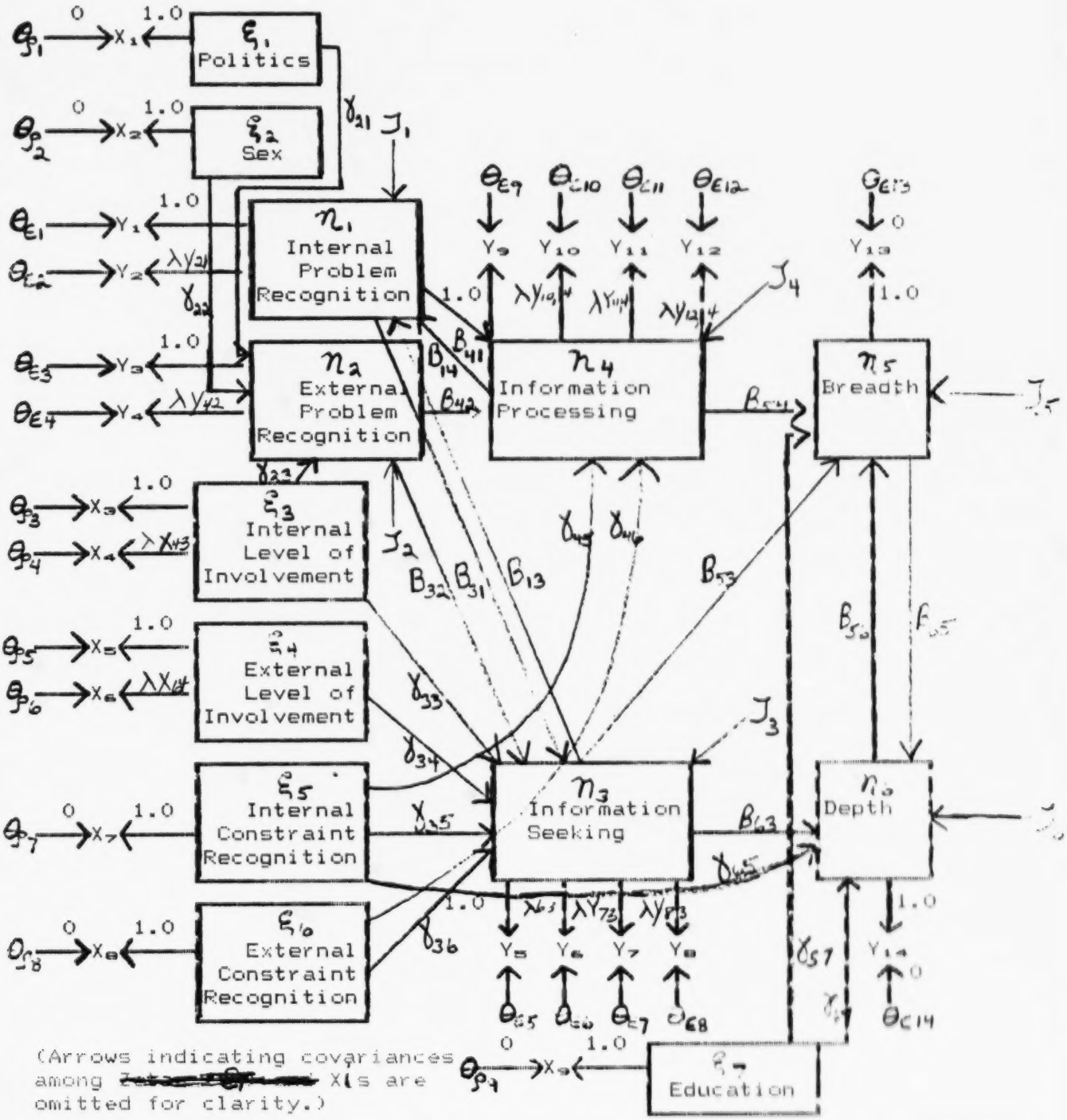

TABLE 3
LISREL Estimates for the Measurement Model

	Raw Estimate	Standardized Estimate	Residual	Reliability
Endogenous variables			($\theta_{\varepsilon i}$)	
Internal Problem Recognition				
Indicator 1 (λ Y1)	1.00	.83	.33	.67
Indicator 2 (λ Y2)	1.10	.91	.19	.82
External Problem Recognition				
Indicator 1 (λ Y3)	1.00	.76	.45	.56
Indicator 2 (λ Y4)	1.13	.86	.29	.71
Information Seeking				
Indicator 1 (λ Y5)	1.00	.91	.18	.82
Indicator 2 (λ Y6)	.71	.64	.59	.41
Indicator 3 (λ Y7)	.93	.85	.28	.72
Actual (λ Y8)	.15	.13	.98	.02
Information Processing				
Indicator 1 (λ Y9)	1.00	.79	.39	.61
Indicator 2 (λ Y10)	.71	.56	.70	.31
Actual (λ Y11)	.17	.13	.98	.02
Indicator 3 (λ Y12)	.88	.69	.53	.47
Breadth of Cognition				
Indicator 1 (λ Y13)	1.00	1.00	.00	1.00
Depth of Cognition				
Indicator 1 (λ Y14)	1.00	1.00	.00	1.00
Exogenous Variables			($\theta_{\delta i}$)	
Politics				
Indicator 1 (λ X1)	1.00	1.00	.00	1.00
Sex				
Indicator 1 (λ X2)	1.00	1.00	.00	1.00
Internal Involvement				
Indicator 1 (λ X3)	.75	.75	.46	.54
Indicator 2 (λ X4)	.77	.77	.42	.58
External Involvement				
Indicator 1 (λ X5)	.79	.79	.43	.56
Indicator 2 (λ X6)	.86	.86	.29	.71
Internal Constraint Recognition				
Indicator 1 (λ X7)	1.00	1.00	.00	1.00
External Constraint Recognition				
Indicator 1 (λ X8)	1.00	1.00	.00	1.00
Education				
Indicator 1 (λ X9)	1.00	1.00	.00	1.00

TABLE 4
LISREL Estimates for the Theoretical Model

Structural Coefficients	Raw Estimate	Standardized Estimate
Exogenous to Endogenous (Gamma)		
Politics to Ext. Problem Recognition (γ_{21})	.04	.05
Male Sex to Ext. Problem Recognition (γ_{22})	-.10	-.13*
Int. Involvement to Ext. Prob. Rec. (γ_{23})	.73	.97*
Int. Involvement to Info. Seeking (γ_{33})	-.83	-.91
Ext. Involvement to Info. Seeking (γ_{34})	-.11	-.12
Int. Const. Rec. to Info. Seeking (γ_{35})	-.06	-.07
Int. Const. Rec. to Info. Processing (γ_{45})	.15	.19
Int. Const. Rec. to Depth (γ_{65})	-.17	-.17*
Ext. Const. Rec. to Info. Seeking (γ_{36})	-.06	-.04
Ext. Const. Rec. to Info. Processing (γ_{46})	.07	.09
Education to Breadth of Cognition (γ_{57})	.59	.59*
Education to Depth of Cognition (γ_{67})	.06	.06
Endogenous to Endogenous (Beta)		
Int. Prob. Rec. to Info. Seeking (β_{31})	1.01	.92*
Int. Prob. Rec. to Info. Processing (β_{41})	-1.31	-1.38*
Ext. Prob. Rec. to Info. Seeking (β_{32})	.80	.66
Ext. Prob. Rec. to Info. Processing (β_{42})	1.81	1.75*
Info. Seeking to Int. Prob. Rec. (β_{13})	-.82	-.90*
Info. Seeking to Breadth of Cog. (β_{53})	-.10	-.09
Info. Seeking to Depth of Cog. (β_{63})	-.06	-.06
Info. Processing to Int. Prob. Rec. (β_{14})	1.75	1.66*
Info. Processing to Breadth of Cog. (β_{54})	.30	.24
Breadth of Cog. to Depth of Cog. (β_{65})	.78	.78*
Depth of Cog. to Breadth of Cog. (β_{56})	-.49	-.49
Residuals of Theoretical Equations (PSI)		
Internal Problem Recognition (ζ_1)	1.10	1.61*
External Problem Recognition (ζ_2)	.00	.00
Information Seeking (ζ_3)	.75	.90*
Information Processing (ζ_4)	.83	1.35
Breadth of Cognition (ζ_5)	1.37	1.35
Depth of Cognition (ζ_6)	.69	.70*

(*p<.05 or less)

Goodness of Fit	
Chi-squared of full model (df=200)	331.38
Ratio of Chi-squared to degrees of freedom	1.66
Chi-squared of null model (df=253)	2044.10
(Probability that full model different from null model	<.001)
Adjusted goodness of fit index	.882
Root mean square residual	.053
Total coefficient of determination	.928

*Four new paths were specified as suggested by the modification indices. These included paths from internal involvement to external problem recognition, depth to breadth, internal constraint recognition to depth, and information seeking to internal problem recognition. The theoretical significance of these new paths will be discussed below.

Tables 3 and 4, then, contain the estimates for the measurement and theoretical models respectively. The tables contain both raw and standardized LISREL estimates, as suggested by McPhee and Babrow (1987, p. 357). Both tables contain residuals, and Table 3 contains the estimated reliabilities of the indicator variables.

Table 3 shows that all but two of the indicator variables have acceptable coefficients and reliabilities. The actual estimates of information seeking and processing were the exceptions, reflecting the low correlations reported earlier.

Table 4 contains the substance of the LISREL analysis. The goodness of fit measures show first that the model fits the data well. With LISREL, a low Chi-squared signifies a better fit. McPhee and Babrow (1987, p. 362) reported that most researchers have accepted a ratio of Chi-squared to degrees of freedom of 5 or less as a rough standard of an acceptable model. Our ratio was 1.66. In addition, Fink and Monge (1985, p. 183) suggested comparing the Chi-squared for the fully specified model with the Chi-squared of a null model that specifies complete independence among the variables. This comparison in Table 4 shows that our model is significantly different from the null model, with essentially no chance of error.

The estimates of path coefficients in Table 4 indicate that the problem recognition variables have the strongest relationship to the communication variables. The only surprise for problem recognition is a significant negative path from internal problem recognition to information processing. Unless this coefficient is in error, it suggests that people who are curious about an issue seek out information and, as a result, are less likely to pay attention to information that comes to them without a search--perhaps because that information has less surprise value.

Two other unexpected coefficients in Table 4 are the negative paths from the two involvement variables to information seeking, although neither is significant. External involvement probably does not lead to information seeking

because most of that variation is accounted for by problem recognition, especially by internal problem recognition.

Other research will be necessary to determine if problem recognition explains communication behavior consistently better than the two kinds of involvement. However, that result could be an artifact of the AIDS issue. AIDS seems to be involving to the ego only of only special segments of the population such as homosexuals and fundamentalists. At present, AIDS also has few consequences (external involvement) for most of the population. Thus, strong curiosity about the disease (internal problem recognition) seems to be necessary for people to seek information actively about it. On the other hand, the perception that AIDS is a problem for society (external problem recognition) explains better why people communicate passively about the issue.

The constraint recognition variables also seem to explain little of communication behavior on this issue. Because constraints are high for most people, those who communicate seem to do so in spite of constraints. However, the new, negative path from internal constraint recognition suggests, logically, that people who believe they cannot understand an issue do not develop deep cognitions about it.

Next, there were no significant relationships between information seeking and processing and breadth and depth of cognition. There was a positive--and logical--path from information processing to breadth, but it was not significant. Education, on the other hand, has a significant path to breadth and breadth a significant path to depth. On this complex issue, at least, people do not seem to be able to understand the information they receive unless they are well educated.

The negative path from depth to breadth, although not significant, suggests an interesting relationship. Once people have a theory to explain a complex problem, it seems, they have less need to accumulate facts about it.

Two remaining significant paths seem to be extremely important for building the situational theory. The strong path from information processing to internal problem recognition explains how messages that reach a person from a communication campaign, for example, can stimulate further communication. If a person takes in information passively that information can trigger internal problem recognition, which in turn triggers information seeking. The important

insight here is that information processing can stimulate information seeking by triggering an intellectual interest in an issue (an internal problem) even though it does not make people realize that they have a problematic situation (an external problem).

The second path that is important theoretically runs from internal involvement to external problem recognition. The path suggests that people most often recognize problems that are related to their self identity--perhaps more broadly to their worldview. Although internal involvement may limit attitude change, it would not necessarily bias external problem recognition and the communication behaviors that follow. Rather it seems more accurate to say that external problem recognition is focused by the internal involvements of people.

CONCLUSIONS

In this paper, we have reviewed the program of research that Grunig and his students have conducted for 20 years to develop a situational theory of communication behaviors, communication effects, and publics. We then reviewed theories and research of other scholars who have studied individual concepts in the situational theory. Most of that literature concerns level of involvement.

We concluded that the definitions and measures of involvement in the literature differ substantially and that many of them confuse involvement with other concepts in the situational theory. When we excluded those concepts of involvement, we isolated two important concepts of involvement: internal (ego involvement) and external (issue involvement). We then examined literature related to problem recognition and constraint recognition and concluded that they, too, could be divided into internal and external dimensions.

We then reviewed recent literature from cognitive psychology to refine the communication effects explained by the situational theory. We identified two cognitive variables: breadth and depth of cognition. We then conceptualized the relationship of the variables to communication behaviors and to the presence of two kinds of attitudes: situational and cross-situational. Finally, we integrated all of these concepts into a causal model of the causes and effects of communication behaviors.

We used the revised theoretical variables to identify publics that arise around the AIDS issue. Independent and dependent variables were correlated simultaneously through canonical correlation, and the canonical variates were

used to describe publics. We identified two publics similar to those found consistently in Grunig's previous research: an active, all-issues public and an apathetic public. The apathetic public was slightly larger than the active public, suggesting the difficulty of a successful communication program to educate this public about AIDS.

The internal and external dimensions of the independent variables of the theory did not isolate publics that were different from those previously identified by the single concepts. The new variables did, however, provide a better understanding of the apathetic public. The apathetic public seems to be unconcerned about this issue because of high internal constraint recognition. It does not feel it can understand the AIDS issue. Yet this public has negative attitudes about AIDS, probably because those are the only attitudes that make sense to members of this public given their high level of internal constraint recognition.

A causal analysis using the LISREL program developed a model that fit the data well. However, it showed that the two concepts of problem recognition explain communication behavior better than the concepts of involvement and constraint recognition. That result could explain why other researchers have not found consistent effects of involvement on communication. Involvement without problem recognition, it seems, has little effect.

Likewise, active and passive communication behaviors had little effect alone on cognitive breadth and depth. Education seems to be necessary before people can integrate the information they seek or process into a cognitive structure. The two new cognitive concepts, however, seem to be important additions to the situational theory. The model showed a positive, although weak, path from passive communication behavior to breadth. This path suggests that cognitive breadth is a limited but feasible objective for communication programs or media coverage of an issue. Cognitive depth, however, can seldom be increased by communication programs--or media coverage--alone.

Finally, the LISREL analysis uncovered two theoretically important new paths in the model. First, passive communication behavior has a positive path to internal problem recognition. That path suggests that communication programs aimed at passive publics or nonpublics can stimulate active communication behaviors by increasing the curiosity of these publics. Second, internal

involvement has a positive path to external problem recognition--suggesting that self identity focuses a person on certain problems in the environment and through that process focuses his or her communication behavior and its effects.

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